

## § 77.806

shall be of the three-phase type and enclosed in a full metallic shell, except that the Secretary may permit, under such guidelines as he may prescribe, no less effective couplers constructed of materials other than metal.

(2) Cable couplers shall be adequate for the intended current and voltage.

(3) Cable couplers with any metal exposed shall be grounded to the ground conductor in the cable.

(4) Couplers shall be constructed to cause the ground check continuity conductor to break first and the ground conductor last when being uncoupled when pilot check circuits are used.

(b) Cable connection boxes shall be of substantial construction and designed to guard all energized parts from personal contact.

## § 77.806 Connection of single-phase loads.

Single-phase loads, such as transformer primaries, shall be connected phase to phase in resistance grounded systems.

## § 77.807 Installation of high-voltage transmission cables.

High-voltage transmission cables shall be installed or placed so as to afford protection against damage. They shall be placed to prevent contact with low-voltage or communication circuits.

## § 77.807-1 High-voltage powerlines; clearances above ground.

High-voltage powerlines located above driveways, haulageways, and railroad tracks shall be installed to provide the minimum vertical clearance specified in National Electrical Safety Code: *Provided, however*, That in no event shall any high-voltage powerline be installed less than 15 feet above ground.

## § 77.807-2 Booms and masts; minimum distance from high-voltage lines.

The booms and masts of equipment operated on the surface of any coal mine shall not be operated within 10 feet of an energized overhead powerline. Where the voltage of over-

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head powerlines is 69,000 volts, or more, the minimum distance from the boom or mast shall be as follows:

Nominal power line voltage (in 1,000 volts)	Minimum distance (feet)
69 to 114 .....	12
115 to 229 .....	15
230 to 344 .....	20
345 to 499 .....	25
500 or more .....	35

## § 77.807-3 Movement of equipment; minimum distance from high-voltage lines.

When any part of any equipment operated on the surface of any coal mine is required to pass under or by any energized high-voltage powerline and the clearance between such equipment and powerline is less than that specified in § 77.807-2 for booms and masts, such powerlines shall be deenergized or other precautions shall be taken.

## § 77.808 Disconnecting devices.

Disconnecting devices shall be installed at the beginning of each branch line in high-voltage circuits and they shall be equipped or designed in such a manner that it can be determined by visual observation that the circuit is deenergized when such devices are open.

## § 77.809 Identification of circuit breakers and disconnecting switches.

Circuit breakers and disconnecting switches shall be labeled to show which units they control, unless identification can be made readily by location.

## § 77.810 High-voltage equipment; grounding.

Frames, supporting structures, and enclosures of stationary, portable, or mobile high-voltage equipment shall be effectively grounded.

## § 77.811 Movement of portable substations and transformers.

Portable substations and transformers shall be deenergized before they are moved from one location to another.